

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C. 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 06 September 2000 (06.09.00)	
International application No. PCT/GB99/04245	Applicant's or agent's file reference PDG/21095
International filing date (day/month/year) 15 December 1999 (15.12.99)	Priority date (day/month/year) 15 December 1998 (15.12.98)
Applicant ROBERTSON, Paul, Gordon	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
11 July 2000 (11.07.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Juan Cruz

Telephone No.: (41-22) 338.83.38

09/8681135

PATENT COOPERATION TREATY

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REC'D 08 FEB 2001

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PDG/21095	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/04245	International filing date (day/month/year) 15/12/1999	Priority date (day/month/year) 15/12/1998
International Patent Classification (IPC) or national classification and IPC H04N7/169		
Applicant SNELL & WILCOX LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 11/07/2000	Date of completion of this report 06.02.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer de Dieuleveult, A Telephone No. +49 89 2399 8946 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04245

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-10 as originally filed

Claims, No.:

14-22 as originally filed

1-13 as received on 11/01/2001 with letter of 08/01/2000

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/04245

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
☒ the parts relating to claims Nos. 1-8,22.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N) Yes: Claims 1-8,22
No: Claims

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04245

Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-8,22
Industrial applicability (IA)	Yes:	Claims	1-8,22
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

IV. Lack of unity

The separate groups of invention are:

- I. Claims 1-8, 22 (main invention)
- II. Claims 9-17
- III. Claim 18
- IV. Claims 19, 20
- V. Claim 21

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

- 1. Claims 1 and 8 are directed to a digital video signal processor for stripping timing reference signals (TRSS) from the digital video signal and inserting other timing reference signals at other locations.
Claim 22 is directed to the corresponding video signal.
NB: it is not quite clear which "scrambled" video signal is meant when referring back to claim 1.
- 2. Claim 9 deals with a digital video interface wherein TRSS are transmitted less than twice per line.
NB: this claim appears not to be supported by the description. Besides, the way TRSS are defined with reference to digital video standards other than Recommendation 656 is not clear.
- 3. Claim 18 is directed to a digital video interface for scrambling data words wherein specific words are re-scrambled until a valid word is obtained.
- 4. Claim 19 is directed to a digital video interface for scrambling data words wherein specific words are replaced with unscrambled words.
- 5. Claim 21 deals with a digital video processor for inserting into the video signal identical TRSS appearing once per picture.
NB: no support is to be found in the description for this claim either.

V. Reasoned statement

- 1. Reference is made to the following document:
D1: US-A-5 757 910 (RIM) 26 May 1998

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04245

2. Claim 1:

Document D1 discloses (see column 3, line 47 - col. 5, l. 46) a digital video processor (120-150) having an input adapted to receive a digital video signal (output from A/D converter 110) and a timing reference processor (130) for inserting timing signal references into the video signal (see the paragraph bridging columns 4 and 5).

Furthermore, it is well known to the skilled person that a video signal (analog or digital) normally comprises first timing signal references at fixed first locations within the line and picture structure (see for instance the "horizontal and vertical synchronous signals" in col. 1, l. 18-23 of D1) and that, for the purpose of scrambling, a timing reference stripper is required to remove said first timing signal references from the video signal (see col. 1, l. 52-57) before said timing reference processor can insert (second) timing signal references into the video signal at locations other than said first locations.

Whether such a timing reference stripper processes an analog or a digital video signal, these are obvious alternatives for the skilled person who would select one or the other, in accordance with circumstances, without the exercise of inventive skill, in order to scramble the video signal.

Consequently, the claimed subject-matter is considered to lack an inventive step with respect to the disclosure of D1.

3. Claim 8:

D1 further discloses a digital video processing system (see figures 3 and 4 together) comprising, in addition to an output component according to claim 1, an input component (210-270) adapted to receive (see antenna A) a digital video signal having said second timing signal references, to remove (230) said second timing signal references and to derive (250) from said second timing signal references appropriate timing references for use in further processing (260) of the digital video signal.

This claim thus does not satisfy the requirements of Article 33(3) PCT either.

4. Claim 22:

The same objection likewise applies to the video signal itself.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04245

5. Claims 2-7:

These dependent claims do not appear to comprise any additional features that would render their subject-matter inventive over the available prior art.

Therefore, these claims fail together with the independent claims for lack of inventive step.

VII. Certain defects

1. The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

VIII. Certain observations

1. Claims 1 through 8 comprise "timing signal references" whereas the description refers to "timing reference signals (TRSs)".
2. Claim 22 does not meet the requirements of Article 6 because it is not clear which "scrambled" video signal is meant when referring back to claims 1 and 8.

CLAIMS

1. A digital video signal processor having an input adapted to receive a digital video signal having first timing signal references at fixed first locations within the line and picture structure; a timing reference stripper for removing said first timing signal references from the digital video signal and a timing reference processor for inserting second timing signal references into the video signal at locations other than said first locations.
2. A processor according to Claim 1, wherein said second timing signal references are substantially fewer in number than said first timing signal references.
3. A processor according to Claim 1, wherein said first timing signal references comprise start of line and end of line references and said second timing signal references are inserted substantially once per picture.
4. A processor according to any one of the preceding claims, wherein substantially every second timing signal reference includes information concerning the number of lines per picture within the digital video signal.
5. A processor according to any one of the preceding claims, wherein substantially every second timing signal reference includes information concerning the length of each line within the digital video signal.
6. A processor according to any one of the preceding claims, wherein substantially every second timing signal reference includes information concerning the aspect ratio of the picture.

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7. A processor according to any one of the preceding claims, wherein substantially all the second timing signal references are identical.
8. A digital video signal processing system comprising an output component adapted to receive a digital video signal having first timing signal references at fixed first locations within the line and picture structure, to remove said first timing signal references and insert second timing signal references at locations other than said first locations; and an input component adapted to receive a digital video signal having said second timing signal references, to remove said second timing signal references and to derive from said second timing signal references appropriate timing references for use in further processing of the digital video signal.
9. A digital video interface substantially in accordance with ITU/R Recommendation 656, or other digital video standard, characterised in that timing reference signals are transmitted less than twice per line in order to inhibit unauthorised use of the video information.
10. A digital video interface as described in Claim 9 where no timing reference signal corresponds to the start or finish of a digital active line.
11. A digital video interface in accordance with either Claim 9 or Claim 10 in which the timing reference signals are identical.
12. A digital video interface in accordance with either Claim 9 or Claim 10 in there is no explicit F, V and H information in the timing reference signals.
13. A digital video interface in accordance with any one of Claims 9 to 12, in which aspect ratio information is carried in the timing reference signals.

REPLACED BY
ART 34 AMDT

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CLAIMS

1. A digital video signal processor having an input adapted to receive a digital video signal having first timing signal references at fixed locations within the line and picture structure; a timing reference stripper for removing said first timing signal references from the digital video signal and a timing reference processor for inserting second timing references into the video signal at locations other than said first locations.
2. A processor according to Claim 1, wherein said second timing references are substantially fewer in number than said first timing references.
3. A processor according to Claim 1, wherein said first timing signal references comprise start of line and end of line references and said second timing references are inserted substantially once per picture.
4. A processor according to any one of the preceding claims, wherein substantially every second timing reference includes information concerning the number of lines per picture within the digital video signal.
5. A processor according to any one of the preceding claims, wherein substantially every second timing reference includes information concerning the length of each line within the digital video signal.
6. A processor according to any one of the preceding claims, wherein substantially every second timing reference includes information concerning the aspect ratio of the picture.

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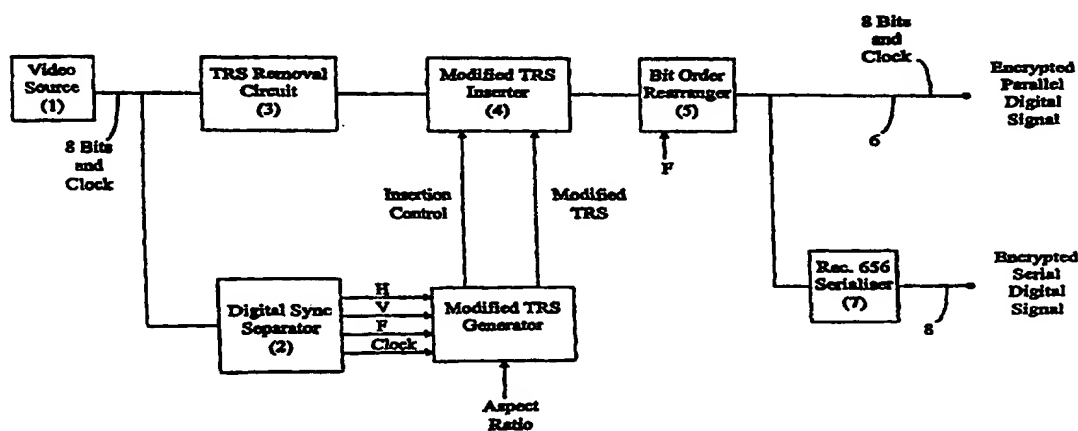
7. A processor according to any one of the preceding claims, wherein substantially all the second timing references are identical.
8. A digital video signal processing system comprising an output component adapted to receive a digital video signal having first timing signal references at fixed locations within the line and picture structure, to remove said first timing signal references and insert second timing references at locations other than said first locations; and an input component adapted to receive a digital video signal having said second timing signal references, to remove said second timing signal references and to derive from said second timing references appropriate timing references for use in further processing of the digital video signal.
9. A digital video interface substantially in accordance with ITU/R Recommendation 656, or other digital video standard, characterised in that timing reference signals are transmitted less than twice per line in order to inhibit unauthorised use of the video information.
10. A digital video interface as described in Claim 9 where no timing reference signal corresponds to the start or finish of a digital active line.
11. A digital video interface in accordance with either Claim 9 or Claim 10 in which the timing reference signals are identical.
12. A digital video interface in accordance with either Claim 9 or Claim 10 in there is no explicit F, V and H information in the timing reference signals.
13. A digital video interface in accordance with any one of Claims 9 to 12, in which aspect ratio information is carried in the timing reference signals.



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : H04N 7/16	A2	(11) International Publication Number: WO 00/36838 (43) International Publication Date: 22 June 2000 (22.06.00)
<p>(21) International Application Number: PCT/GB99/04245</p> <p>(22) International Filing Date: 15 December 1999 (15.12.99)</p> <p>(30) Priority Data: 9827612.4 15 December 1998 (15.12.98) GB</p> <p>(71) Applicant (for all designated States except US): SNELL & WILCOX LIMITED [GB/GB]; 6 Old Lodge Place, St. Margaret's, Twickenham, Middlesex TW1 1RQ (GB).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): ROBERTSON, Paul, Gordon [GB/GB]; 197 The Causeway, Petersfield, Hampshire GU31 4LN (GB).</p> <p>(74) Agents: GARRATT, Peter, Douglas et al.; Mathys & Squire, 100 Gray's Inn Road, London WC1X 8AL (GB).</p>		<p>(81) Designated States: AU, CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>Without international search report and to be republished upon receipt of that report.</i></p>

(54) Title: DIGITAL VIDEO PROCESSING



(57) Abstract

To inhibit unauthorised copying, the standard timing reference signals in a Rec 656 digital video signal are stripped out and replaced by a single timing reference per frame. Authorised equipment contains the processing to reconstruct the necessary timing from these timing references. Additionally, the digital words can be scrambled by bit re-ordering or by a more sophisticated process.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PDG/21095	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 04245	International filing date (day/month/year) 15/12/1999	(Earliest) Priority Date (day/month/year) 15/12/1998
Applicant SNELL & WILCOX LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2x sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

DIGITAL VIDEO PROCESSING TO INHIBIT UNAUTHORISED COPIES

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/04245

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N7/169 H04N7/171

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 757 910 A (RIM) 26 May 1998 (1998-05-26) column 1, line 52 -column 2, line 64 column 3, line 47 -column 5, line 46; figures 3-5	1-22
P,A	EP 0 949 815 A (NEC CORPORATION) 13 October 1999 (1999-10-13) column 6, line 6 -column 7, line 44; figure 1	15-22

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

10 July 2000

Date of mailing of the international search report

14/07/2000

Name and mailing address of the ISA

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Authorized officer

Dudley, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/04245

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5757910	A	26-05-1998	KR 9611031 B	16-08-1996
			KR 9708408 B	23-05-1997
EP 0949815	A	13-10-1999	JP 11298878 A	29-10-1999